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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/075,043	02/12/2002	David Tseng	56956 (71987)	7505

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EXAMINER

NGUYEN, KHIEM D

ART UNIT PAPER NUMBER

2823

DATE MAILED: 09/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/075,043

Applicant(s)

TSENG ET AL.

Examiner

Khiem D Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-41 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bertolet et al. (U.S. Patent 6,204,074) in view of the applicant's admitted prior art (AAPA) of this application.

In re claims 1, 12, 22, and 33, Bertolet discloses a wire bonding method for use in fabrication of a semiconductor package, comprising the steps of: (1) preparing a substrate composed of a plurality of substrate units, and mounting at least a chip on each of the substrate units (FIG. 9, 202); (2) providing a wire bonding station at least having a wire bonding mechanism (FIG. 9, 214) and a testing mechanism (FIG. 9, 216) so as to allow the substrate mounted with the chips to be introduced into the wire bonding mechanism; (3) forming a plurality of bonding wires on one substrate unit of the substrate via the wire bonding mechanism so as to electrically connect a corresponding chip to the substrate unit (FIG. 9, 214); (4) introducing the wire-bonded substrate unit into the testing mechanism for performing an O/S (open/short) test (FIG. 9, 218), and wherein if test results indicate no occurrence of wire opening or short circuit for the bonding wires formed on the wire-bonded substrate unit, then step (5) proceeds (FIG. 9, 226, 228); wherein if the test results indicate occurrence of wire opening or short circuit for the

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bonding wires on the wire-bonded substrate unit, the testing mechanism is prompted to generate a control signal to the wire bonding mechanism for interrupting a wire bonding process, whereby the wire bonding mechanism is adjusted or repaired (FIG. 9, 222), or other causes of wire opening or short circuit are traced and overcome, so as to rework the bonding wires on the wire-bonded substrate unit, and then repeat the step (4); (5) repeating the step (3) until all the substrate units of the substrate are wire-bonded and tested with the O/S test, and then proceeding with step (6); and (6) moving the wire-bonded and tested substrate out of the wire bonding station, for allowing the substrate to be used in subsequent package fabrication (col. 14, lines 26-54 and FIGS. 1-9).

In re claims 2, 13, 23, and 34, Bertolet discloses wherein the testing mechanism includes at least a test socket and a tester electrically connected to the test socket (FIG. 9, 216, 218).

In re claims 3, 14, 24, and 35, Bertolet discloses wherein the test socket is used to come into contact with the wire-bonded substrate unit, allowing the tester to perform the O/S test for the bonding wires on the substrate unit through the test socket (FIG. 9, 218).

In re claims 4, 15, 25, 36, and 38, Bertolet discloses wherein the tester at least includes: a testing module electrically connected to the test socket, for performing the O/S test through the test socket; and a controlling module electrically connected to the testing module and the wire bonding mechanism for receiving a test-failure signal from the testing module in occurrence of wire opening or short circuit, and generating a control signal to the wire bonding mechanism so as to interrupt the wire bonding process in the wire bonding mechanism (FIG. 9, 216, 218).

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In re claims 5, 16, and 26, Bertolet discloses wherein the tester is further electrically connected to a test socket of at least another wire bonding station so as to simultaneously control test sockets in a plurality of wire bonding, so as to simultaneously control test sockets in a plurality of wire bonding stations for performing the O/S test (FIG. 9, 216, 218).

In re claims 6, 17, and 27, Bertolet discloses wherein the wire bonding station further includes a handling mechanism for moving the substrate into or out of the wire bonding station (col. 14, lines 26-54 and FIG. 9).

In re claims 7, 18, and 28, Bertolet discloses wherein the wire bonding station is a wire bonding machine internally provided with the testing mechanism and the testing mechanism is disposed at a downstream position relative to the wire bonding mechanism in the wire bonding machine (FIG. 9, 218).

In re claims 8, 19, and 29, Bertolet discloses wherein the wire bonding station includes a wire bonding machine internally provided with at least a test socket, and a tester externally connected to the wire bonding machine and electrically connected to the test socket, which test socket is disposed at a downstream position relative to the wire bonding mechanism (col. 14, lines 26-54 and FIG. 9).

In re claim 9, 30, 37, and 39, Bertolet discloses wherein the step (4), upon receiving the control signal from the testing mechanism the wire bonding mechanism interrupts the wire bonding process after the next adjacent substrate unit is completely wire-bonded (col. 14, lines 26-54 and FIG. 9).

In re claims 10, 20, 31, and 40, Bertolet discloses wherein the substrate units of the substrate are arranged in a matrix type (FIG. 9).

In re claims 11, 21, 32, and 41, Bertolet discloses wherein the substrate units of the substrate are arranged in a single-array type (col. 14, lines 26-54 and FIG. 9).

Bertolet fails to explicitly disclose wherein forming bonding wires on a next adjacent substrate of the substrate simultaneously moved into the wire bonding mechanism as recited in present independent claims 1, 12, 22, and 33.

AAPA discloses forming bonding wires on a next adjacent substrate of the substrate simultaneously moved into the wire bonding mechanism (pages 3-4). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teaching of Bertolet and AAPA to enable the process of introducing the wire-bonded substrate unit into the testing mechanism for performing an O/S (open/short) test, and forming bonding wires on a next adjacent substrate of the substrate simultaneously moved into the wire bonding mechanism of Bertolet to be performed and furthermore to make the overall fabrication time effectively shortened.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khiem D Nguyen whose telephone number is (703) 306-0210. The examiner can normally be reached on Monday-Friday (8:00 AM - 5:00 PM).


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on (703) 306-2794. The fax phone numbers

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for the organization where this application or proceeding is assigned are (703) 746-9179 for regular communications and (703) 746-9179 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

K.N.
September 7, 2003


Dilk Chaudhuri
Supervisory Patent Examiner
Technology Center 2800